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ABSTRACT

This paper presents case studies of two elementary preservice teachers involved in action research. Both were participating in public school field experiences. They were given literature on action research in order to better understand the process, then they determined their areas of research interest. One student studied his interaction with male and female students in the classroom. The other examined how academic ability and seating location, as well as student gender, influenced her questioning of students and teacher-student interactions in general. To identify benefits of and obstacles to student teacher action research, both students answered questions about their experiences researching their own teaching. Both considered the word "research" frightening and had a hard time finding someone willing to complete the observations of their work. They both felt it was difficult deciding upon a problem to study. The biggest obstacle they faced was that teachers in the schools had limited, if any, knowledge of action research. Benefits included the opportunity to refine their observational and evaluative skills. Both respondents believed that preservice teachers already participate in action research, though informally. They felt that action research should be implemented, at least on a small scale, in teacher education programs. (SM)

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The president of the university with which the researchers are affiliated shared his goal of becoming recognized nationally as being in the top five percent of regional universities with regards to undergraduate research. An examination of the elementary program of study indicated that the department did little to promote undergraduate research with pre-service teachers. In an effort to identify obstacles to action research before embarking on a college-wide program, several pre-service teachers were asked to volunteer to conduct research during their student teaching experience. This study is based on two of those volunteers.

Research has shown that pre-service teachers participating in action research have demonstrated professional growth as a result of such inquiry (Kasten & Write, 1996; Russell, 2000; Tighe, 1999). Many educators believe that action research is the most effective strategy for bringing about change in the classroom (Tighe, 1999). If practicing teachers are to be expected to conduct research on their own teaching they must become knowledgeable of the techniques and skills needed for effective action research. They must also become aware of the benefits of conducting research in the classroom. Teacher education programs seem to be the most obvious place to learn such skills as many new teachers will not receive formal training for a number of years. In fact, Arnold (1992) states that teacher education programs should build a strong research component into their student teaching experience because "if pre-

service teachers perceive teaching as an inquiry process that requires ongoing reflection and critical analysis then they will be more likely to continue in this direction throughout their careers" (p.7).

Hopkins (1993) defines action research as "an act undertaken by teachers, to enhance their own or a colleague's teaching, to test the assumptions of educational theory in practice, or as a means of evaluating and implementing whole school priorities" (p.1). Action research is research conducted by teachers with the purpose of improving some aspect of the school environment (Hopkins, 1993). It can take the form of formal, school-wide investigations or informal, single-case observations. The difference between classroom action research and empirical research conducted by professional researchers is that the purpose of action research is to improve practice in a single school, classroom, or case.

There is no consensus among educators as to the definitions of the terms action research and reflective teaching. Dinkelman (1997) stated that "action research is defined, intentional, systematic inquiry by practitioners into their own practice usually proceeding by way of a spiraling, recursive series of at least these four steps- plan, act, observe, and reflect" (p. 251). Action research differs from traditional research in that it involves practitioners. The author suggested that another main difference between action research and traditional research is that traditional research usually begins by researching related educational literature while action research is conducted by practitioners who perceive problems in their immediate context. In addition, the author suggested that educational practitioners may develop more interest in research that they frame themselves as opposed to traditional research that

is often conducted by professional researchers, who have limited access to "real" educational settings, at colleges and universities

There are some benefits that action researchers receive as a result of conducting research on their teaching. First, these teachers find ways to improve their teaching practices. Individuals who engage in action research increase their individual development, both personal and professional. The collaboration aspect of action research opens up lines of communication with colleagues. Increase in collaboration leads to greater levels of collegiality (Dinkelman, 1997).

Dinkelman (1997) also discussed how action research can improve the reflective teaching practices of pre-service teachers and how teacher educators can implement action research. One of those ways was to have student interns actually conduct an action research project. Time limits in student internship may present a problem. Most student intern placements are short in duration and would not provide sufficient time for a well thought out action research plan.

Action research is a result of reflective teaching. That is, as teachers reflect on their own teaching and experiences in the classroom they begin to plan ways in which to test assumptions in order to improve their teaching. Teachers' knowledge is also an important aspect of action research. Mayer (1991) suggested that teachers' knowledge can be common sense or uncommon sense. Common sense knowledge is that knowledge that teachers develop from their own experiences. Mayer stated that common sense knowledge is problematic because it as seen as "unchallengeably true" (p. 7). Uncommon sense knowledge, on the other hand, is "more reflected upon, more explicitly worked out, and perhaps most importantly, more open to change and

modification on the basis of our own experience and that of others" (Mayer, 1991, p. 7). Teachers who reflect on their own teaching engage in action research, which leads to uncommon sense knowledge.

Preservice and practicing teachers should be involved in action research for a number of reasons. First, "classroom research can be justified by references to professionalism because systematic self-study is a hallmark of those occupations that enjoy the label 'professional'" (Hopkins, 1993, p. 33). Second, traditional research conducted by university faculty is often not meaningful to undergraduate students (Hopkins, 1993). Teachers seem to make meaningful connections to research findings when they have been a part of the inquiry process. Arnold (1992) states that "in order for teachers to obtain current information, they must be able to not only review current research in the field but also to construct and create new knowledge" (p. 6).

If teacher educators make action research and reflective teaching a priority, the potential impact would be great. It seems that it would be much easier to train pre-service teachers than it would be to train veteran teachers. Not all teachers are going to come back to the university after their undergraduate work is complete. Stressing the importance of reflective thinking and teacher research would ensure that all teachers entering the profession have that foundation.

Methodology

This study was conducted at a regional university located in the Southeast United States. Both of the participants are students in the elementary program in the college of education. These two students were involved in field experiences in the

public schools affiliated with the university. One male and one female, hereafter referred to as Student A and Student B, respectively, participated in the study. Student A was in his last semester of teacher education and was completing his full-time internship. Students B was in her next to last semester of teacher education and was involved in part-time internship.

Procedures

At the beginning of the Spring 2001 semester, Student A indicated his willingness to participate in an action research project. The student and the university professor met several times to discuss action research in general and to identify a problem of interest to the student. The student was given literature related to action research in order gain a better understanding of the process. The student indicated his interest in studying his interaction with male and female students. Specifically, he wanted to see if there was a difference in the number of times he interacted with male students during questioning as opposed to the number of interactions with female students. Together, the student and the university professor identified existing literature related to teacher/student interactions and questioning techniques. After the student reviewed the literature he met with the university professor to identify observation techniques needed to gather the data. It was decided that a classroom diagram would be used to record the verbal flow of several lessons.

Student A first used the classroom diagram to record the teacher/student interactions of the classroom teacher. This was done to help the student become familiar with the process of observing and recording data. The student then recorded

himself teaching several lessons and then indicated the number of interactions on the classroom diagram.

Student A found that he, just like his classroom teacher, interacted more with male students than with female students. He had previously hypothesized that there would be no gender differences in his questioning of students. This student found the results troubling. He indicated at the end of the study that he wanted to be conscious not to repeat this behavior during his internship or in his future professional life.

Student B indicated her willingness to participate in the study during the Fall 2001 semester. As with Student A, Student B met with the university professor to receive literature related to action research and to discuss an area of research interest. This student also chose to study her questioning techniques. However, this student was looking at how academic ability and location of seating in addition to gender of students played a part in her questioning of students and teacher/student interaction in general. Again, this student read the assigned material and chose to also use a classroom diagram to record the verbal flow of the lesson. Student A asked the university professor to complete the classroom diagram during several observations of the student.

Student B analyzed the data on the classroom diagrams and found that she tended to call on students in the front of the room more so than the back and sides of the room. In fact, during one 30-minute lesson she did not interact with the right side of the room for the first 15 minutes of the lesson. Even then, she only interacted with one person for the remainder of the lesson. In addition, she found that she called on higher achieving students more so than she called on lower achieving students.

Student B attributed this tendency to the fact that when she is being observed by her cooperating teacher or her university supervisor she tends to call on students "who are likely to know the right answers" so as to appear that she has accomplished her objectives. She did not find gender differences in her teacher/student interactions. She had previously hypothesized that she called on more female students than male students.

After the classroom research Student B indicated that she had already made changes in her questioning techniques. First, she has devised schemes to make sure she calls on all students. Such schemes include using markers with students' names when calling on students and using checklists to ensure that all students are called upon. Second, in an effort to involve lower achieving students, she tries to simplify her questions so that all students understand what is being asked.

Instrumentation

In order to identify the benefits of and obstacles to pre-service teacher action research, both students were asked a series of questions related to their experiences with researching their own teaching. Student A responded to the interview questions via email and Student B did so via a telephone conference call. The questions are listed below.

1. What were the biggest obstacles you faced as you conducted your classroom research?
2. What benefits do you see in conduction classroom research?
3. What skills do you think are necessary for teachers to conduct research on their own teaching?

4. What assistance would be helpful/necessary from university faculty?
5. Is classroom research something that pre-service teachers need to know?

Both students responded to all questions and a discussion of the answers to these questions follows.

Results and Conclusions

The purpose of this case study was to identify benefits of and obstacles to pre-service teacher action research. This objective was accomplished by observing the students as they conducted their research and by analyzing their responses to the interview questions.

The students identified several obstacles they faced during the research process. First, the word "research" is frightening to undergraduate students. Student B indicated that her first thought was, "I will never have time to do all that is necessary for research while completing other requirements." Second, it was difficult for the students to find someone willing to complete the observations. Student A decided to videotape his lesson and complete the verbal flow diagram himself. However, most schools in the area restrict the use of a video camera in the classroom. Student B had the university supervisor complete the observations but it was difficult scheduling times convenient to both. Third, both students indicated that it was difficulty deciding upon a problem to study. It was mentioned that, if implemented on a larger scale, most students would probably choose the same problem to study. The biggest obstacle faced by these students was the fact that

teachers in the schools have limited, if any, knowledge of action research. It would be difficult to assign pre-service teachers a project with which cooperating teachers would not have the skills necessary to provide assistance to the student.

The participants also identified several benefits. For the researcher, action research provides an opportunity to refine their observational and evaluative skills. Student A indicated the following:

> For the classroom teacher, active classroom research can be valuable. Of course this only applies to educators who are open minded, can sustain minimal criticism, and desire professional development. The teacher can take the results of the research, evaluate behaviors associated with the research, and develop strategies to make needed alterations to their behaviors according to the results of the research.

Student B agreed with this statement and added that many teachers do not reflective on their own teaching and action research would provide this opportunity. By observing behaviors and actions in such a manner one can perceive behaviors that may otherwise go unnoticed.

Action research is not an easy task and these students understand that there are many skills necessary for teachers to conduct research on their own teaching. The following lists those skills identified by the students.

1. Teachers need to be able to define a clear and definite focus of a problem or an answer to the questions - "What am I looking for?"
2. Teachers need objectivity without biased to what one's intentions, motivations, or conditions are during the research.

3. Teachers must have a willingness to observe their teaching performance from a different perspective; one derived from unbiased research and critical evaluation.
4. Teachers need skills in reviewing and critiquing existing literature in the field.
5. Teachers must be able to analyze the data they collect. Some teachers may not be able to separate good research from their own personal bias. Other teachers may be able to evaluate themselves in such a way that their bias is minimized and the accuracy of their data is not compromised by partiality.
6. Teachers should be willing and able to share their research findings with their peers.

It should be the task of the university professors to ensure that students have these skills before embarking upon such research.

University faculty could greatly aid undergraduate action research. University faculty have more experience with research, are more well versed in what constitutes "good" research, and have been involved and exposed to more research opportunities than undergraduate researchers. University faculty can use their expertise in the field, and their experience with research, to guide the researcher in their endeavors and aid them conducting and evaluating research. University faculty could aid undergraduates in the development and refinement of research goals and expectations, provide undergraduates with research-based literature, and use various modes of communication (personal visits, email, phone calls, etc.) to keep in contact

with the researchers and keep them informed of novel ideas, suggestions, and important dates associated with the research data. The simple willingness to help and communicate with undergraduate researchers may be the most important assistance that faculty could provide.

Both participants indicated that they believe that pre-service teachers already partake in action research, though not formally. Student A stated that teachers are

> constantly observing and evaluating such classroom aspects as behavior management techniques, instructional strategies, and evaluation and assessment systems. Every time a student observes a teacher and learns how to do something, or how not to do something, he or she has participated in research that may help in their future classrooms.

The students indicated that action research, at least on a small scale, should be implemented in the teacher education program. The process, according to these students, "allows pre-service teachers to grow in our profession."

In conclusion, several benefits of and obstacles to pre-service teacher action research have been identified by these students and the university researcher. Anyone wishing to implement action research on a larger scale must address each of these issues in turn. Pre-service teachers must come to understand the benefits of conducting such research on their own teaching. Without a clear purpose, students are not likely to take such assignments seriously. In addition, pre-service teachers already complain about the amount of work that they have during their internships. Student B responded to this problem. She stated that "this (action research) is so much more beneficial than the busy work that professors give us." Teacher educators

need to identify those assignments that most benefit the student in the future. Maybe action research would replace this "busy work" as opposed to assigning it as additional work.

Research suggests that teachers, and as a result, students, benefit greatly from action research. However, a majority of the teachers in the schools do not engage in such self-reflection. Teacher educators can provide the skills necessary for such research and they can make sure that pre-service teachers understand the need for action research.

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